

Reopening Closed Buildings: Legionella and Other Health Risks

By David A. Rockman and Jessica L. Rosenblatt

Reopening a closed building, or portions of a building, after an extended shutdown can be more complicated than just unlocking the doors and turning on the lights. The unprecedented shutdowns and reduced operations at a wide variety of commercial buildings and structures, ranging from office buildings and retail stores to hotels and restaurants, as a result of the COVID-19 pandemic is an entirely unique situation. Building owners and operators need to be aware of health risks, and corresponding legal liability risks, that can result from building closures, specifically Legionella (the cause of Legionnaires' disease) and mold.

The U.S. Centers for Disease Control and Prevention (CDC) has issued guidance calling attention to the increased risk of Legionella and mold associated with temporary building shutdowns and reduced operations during COVID-19. The CDC warns that building inactivity resulting in reductions in normal water use and routine maintenance can give rise to microbial hazards for returning occupants.

Legionella and Legionnaires' disease

Stagnant or standing water in a plumbing system can increase the risk for growth and spread of Legionella, a bacteria that can cause a serious type of pneumonia called Legionnaires' disease as well as a less serious illness called Pontiac fever. In the ordinary course of business, most buildings heat and sometimes cool water that flows through pipes at a rate that maintains consistent, safe temperatures. However, when the buildings are unoccupied and water is not flowing as readily, water sits in pipes and storage tanks longer. Hot water can cool, and cold water sitting in exterior pipes or tanks can warm. This can cause water temperatures to rise or fall into the Legionella growth range (77–108°F, 25–42°C) and cause hazards in areas like cooling towers, showers, pools, hot tubs, and fountains. It can also lead to low or undetectable levels of disinfectant, such as chlorine, which kills disease-causing pathogens like Legionella.

Legionnaires' disease is deadly in approximately 10% of cases. People with weakened immune systems are particularly at risk. It is important not only to protect guests and customers but staff and other building occupants. Employees or service providers at increased risk of developing Legionnaires' disease should consult with a medical provider regarding participation in flushing, cooling tower cleaning, or other activities that may generate aerosols. It may be necessary to wear a half-face air-purifying respirator equipped with an N95 filter, or an N95 filtering facemask, in enclosed spaces where aerosol generation is likely to occur. Of course, obtaining an N95 filter or facemask can be challenging in the midst of COVID-19.

The CDC recommends steps to minimize Legionella risk when a business or building reopens:

- Flush the water system through all points of use. Steps should be taken to minimize splashing and aerosol generation during flushing. This may include wearing a respirator or N95 facemask.

- Properly maintain the water system, including regularly checking water quality parameters such as temperature, pH, and disinfectant levels.
- Ensure water heaters are properly maintained and the temperatures are correctly set to at least 120°F, while also being mindful to prevent scalding.
- Ensure cooling towers are clean and well maintained according to the manufacturer's guidelines and industry best practices.
- Ensure hot tubs and spas are safe for use. Follow the CDC hot tub disinfectant guidance available at the CDC website.
- Clean all decorative water features, such as fountains, to ensure they are free of visible slime or biofilm. After the water feature has been re-filled, measure disinfectant levels to ensure the water is safe for use.
- Ensure safety equipment, including fire sprinkler systems, eye wash stations, and safety showers are regularly flushed, cleaned, disinfected, and well maintained.

The CDC also recommends businesses develop a comprehensive water management plan (WMP) for the water system and all devices that use water. A WMP is a multi-step, continuous process designed to identify areas in a building where Legionella could grow and spread, reduce risk by managing and monitoring the water system, and trigger action when risks are identified. However, this is a longer-term solution rather than an immediate one.

Mold

Mold can grow on a variety of surfaces where there is moisture, such as ceiling tiles, wallpaper, insulation, drywall, carpet, and fabric. Moisture can be caused by leaks or condensation from roofs, windows, or pipes, or from a flood, which may go unnoticed during a building shutdown. Mold can be particularly harmful to those with asthma, respiratory conditions, mold allergies, and weakened immune systems.

The CDC recommends steps to minimize mold risk during and after a prolonged building shutdown:

- Maintain indoor humidity as low as possible, not exceeding 50%, as measured with a humidity meter.
- Particularly in high moisture environments or environments where leaks and maintenance issues are common, buildings should be inspected, preferably by trained industrial hygienists, for mold and excess moisture prior to occupants returning. If dampness or mold is detected, address the source of water entry first. Clean up and remediation should then be conducted before the building is reoccupied.
- A building HVAC system that has not been active during a prolonged shutdown should be operated for at least 48 to 72 hours before occupants return.
- After a building is reopened and occupied, routine (i.e., weekly) checks of the HVAC system are recommended to ensure operating efficiency. If no routine HVAC operation and maintenance program is in place for the building, one should be developed and implemented.

The CDC guidance can be accessed here: [CDC Guidance](#)